STAFF ANALYSIS
EMERGECY SPECIAL ACTION
WSA21-02

ISSUES

Wildlife Emergency Special Action WSA21-02, submitted by the Yukon Kuskokwim Delta Subsistence Regional Advisory Council, requests the Federal Subsistence Board (Board) increase the harvest limit for moose in Unit 18 remainder from 2 moose to 3 moose through the current hunt season ending on April 30, 2021.

DISCUSSION

The proponent states the requested action is needed to ensure long-term sustainability of the lower Yukon River area moose population, which is currently much larger than can be supported by available habitat. They express concern that if this moose population is not reduced, then it is at risk of crashing. The proponent continues that additional harvest opportunity will support lower Yukon River communities' ability to provide not only for their own families and community, but also increase sharing opportunities with communities in other areas of the Yukon-Kuskokwim Delta that do not have easy access to moose populations and are in need of subsistence food support. The proponent points to the dramatically low 2020 salmon returns that left many families and communities without enough frozen or dry fish to make it through the winter, along with the recent closure to the harvest of Mulchatna caribou which was an important source of red meat, as underscoring the urgency of this request. The proponent further states that expanding harvest opportunity of the super-abundant moose population in the lower Yukon River will help support sharing with those in need throughout the Yukon-Kuskokwim Delta region.

Existing Federal Regulation

Unit 18—Moose

Unit 18 remainder—2 moose, only one of which may be antlered. Antlered bulls may not be harvested from Oct. 1 through Nov. 30.	*Aug. 1 – Apr. 30*

Proposed Federal Regulation

Unit 18—Moose

*Unit 18 remainder—~~2~~ **3** moose, only one of which may be antlered. Antlered bulls may not be harvested from Oct. 1 through Nov. 30.*	*Aug. 1 – Apr. 30*

Existing State Regulation

Unit 18—Moose

Unit 18, remainder	*Residents—two moose only one of which may be an antlered bull, taking cows accompanied by calves or calves is prohibited*	*Aug. 1-Sept. 30*
	or	
	Residents—two antlerless moose	*Oct. 1-Nov. 30*
	or	
	Residents—two moose	*Dec. 1-Apr 30*
	Nonresidents—one antlered bull	*Sept. 1-Sept. 30*
	or	
	Nonresidents—one antlerless moose	*Dec. 1-Mar. 15*

Extent of Federal Public Lands/Waters

Federal public lands comprise approximately 66.74% of Unit 18, and consist of 63.97% U.S. Fish and Wildlife Service (USFWS) managed lands and 2.77% Bureau of Land Management (BLM) managed lands (**See Unit 18 Map**).

Customary and Traditional Use Determinations

Residents of Unit 18, Aniak, Chuathbaluk, Upper Kalskag, and Lower Kalskag have a customary and traditional use determination for moose in Unit 18, that portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of (but excluding) the Tuluksak River drainage.

Residents of Unit 18, St. Michael, Stebbins, Upper Kalskag, and Lower Kalskag have a customary and traditional use determination for moose in Unit 18, that portion north of a line from Cape Romanzof to Kusilvak Mountain to Mountain Village, and all drainages north of the Yukon River downstream from Marshall.

Residents of Unit 18, Lower Kalskag, and Kalskag have a customary and traditional use determination for moose in the Unit 18 remainder area of this customary and traditional use determination.

Regulatory History

In November 2005, the Alaska Board of Game (BOG) adopted Proposal 4 in response to the rapid growth of the lower Yukon moose population. Action taken on the proposal modified the State harvest limit by allowing the harvest of antlered bulls only and established a winter season for antlered bulls and calves. During its November 2007 meeting, the BOG adopted Proposal 6, which lengthened the fall moose season for the lower Yukon and remainder areas of Unit 18 by 21 days and lengthened the winter season in the lower Yukon by 10 days.

At its March 2009 meeting, the BOG adopted Proposal 228, which liberalized the State harvest limit from antlered bulls to any moose for the Dec. 20–Jan. 20 season in the lower Yukon area of Unit 18. The BOG stated that the affected moose population increased to a size that could support the harvest of cows.

At its November 12, 2009 work session, Board approved Special Action WSA08-13, which requested the harvest limit in the lower Yukon area of Unit 18 be increased to two moose per regulatory year, with one allowed in the fall and one in the winter.

At its November 13−16, 2009 meeting, the BOG adopted new regulations to extend the winter season from Jan. 20 to Feb. 28 and move the boundary between the lower Yukon and the remainder areas south, to a more discernible geographic land mark.

Proposal WP10-56, submitted by the Yukon Delta National Wildlife Refuge, requested that the harvest limit in the lower Yukon area of Unit 18 (that portion north and west of a line from Cape Romanzof to Kusilvak Mountain to Mountain Village and excluding all Yukon River drainages upriver from Mountain Village) be changed to two moose per regulatory year. Hunters would be allowed to harvest one antlered bull in the fall season and one moose in the winter season. Hunters that did not harvest a moose in the fall would be allowed to harvest two moose during the winter season. The proposal also requested that the Yukon Delta National Wildlife Refuge manager be delegated the authority to restrict the harvest in the winter season to one antlered bull or one moose per regulatory year, after consultation with the Alaska Department of Fish and Game (ADF&G). The proposal was adopted by the Board with modification to extend the winter season to February 28.

Proposal WP10-57, submitted by the Yukon Delta National Wildlife Refuge, requested a change in a portion of the regulatory boundary description for Unit 18, north and west of a line from Cape Romanzof to Kusilvak Mountain to Mountain Village, and excluding all Yukon River drainages

upriver from Mountain Village. This area was referred to as the lower Yukon hunt area. The proposal was adopted by the Board with modification to remove the Cape Romanzof to Kusilvak Mountain section and replace it with a descriptor for the Kashunuk River drainage.

Proposal WP12-49, submitted by the Yukon Delta National Wildlife Refuge, requested the moose season in Unit 18, that portion north and west of the Kashunuk River including the north bank from the mouth of the river upstream to the old village of Chakaktolik, west of a line from Chakaktolik to Mountain Village and excluding all Yukon River drainages upriver from Mountain Village, be revised from fall and winter dates (Aug. 10 - Sept. 30 and Dec. 20 - Feb. 28) to Aug. 1 through the last day of February. The harvest limit would be two moose, only one of which may be antlered. The harvest of an antlered bull would be limited to the dates of Aug. 1 – Sept. 30. The proposal was adopted with modification by the Board at its January 2012 meeting to allow for the harvest of an antlered bull starting on Aug. 1 instead of Sept. 1.

Proposal WP14-23, submitted by the Yukon-Kuskokwim Delta Subsistence Regional Advisory Council, requested an extension of the moose season in Unit 18, that portion north and west of the Kashunuk River including the north bank from the mouth of the river upstream to the old village of Chakaktolik to Mountain Village and excluding all Yukon River drainages upriver from Mountain Village, from August to the last day of February, to Aug. 1 – Mar. 31. It also requested removal of the bull-only restriction from Aug. 1 –Sept. 30. The proposal was adopted with modification by the Board, which resulted in combining the lower Yukon portion of Unit 18 with Unit 18 remainder, establishing a single Yukon drainage hunt area. The modification also stipulated that antlered bulls may not be harvested Oct. 1 – Nov. 30.

In 2018, the Board adopted proposal WP18-29, submitted by the Orutsararmiut Native Council, which requested the moose season in Unit 18 remainder be lengthened from Aug. 1-Mar. 31 to Aug. 1-Apr. 30.

Biological Background

Moose began to migrate into the Yukon-Kuskokwim Delta during the mid- to late-1940s and have become an important subsistence resource for locals (Perry 2014). Moose rely on willow and shrub habitats for browsing and for cover from predators (Tape et al. 2016). The taller vegetation heights estimated in the northern and western portions of the state provide more suitable cover and increased available forage above the snowpack for moose populations than was present in the past (Tape et al. 2016), yet most of the Yukon-Kuskokwim Delta is lowland treeless tundra and is not suitable as winter moose habitat. Consequently, much of the region supports only low to very low density moose populations. However, productive habitat does exist along river corridors, with approximately 4,500 mi^2 and 3,500 mi^2 of suitable moose habitat occurring along the Yukon and Kuskokwim Rivers, respectively (Perry 2014). The Yukon River population currently occupies most of the available riparian habitat, is at moderate to high density, is growing, and has high calf production and yearling recruitment (Perry 2014).

State management goals for moose in Unit 18 include allowing the populations to increase to levels sustainable by the current habitat, maintaining healthy age and bull:cow structures, monitoring the population size, trend, and composition, maintaining a continual and sustainable bull harvest, improving harvest reporting, and minimizing user group conflicts related to moose (Perry 2014). Similarly, State management objectives for the unit include methods to meet these goals such as allowing moose populations to increase above their current levels, maintaining a minimum of 30 bulls:100 cows, conducting seasonal composition surveys, and conducting winter censuses and recruitment surveys (Perry 2014).

Population and composition surveys are conducted in four survey areas in Unit 18. These survey areas include the Paimiut area, the Andreafsky (Middle Yukon) area, the Lowest Yukon area, and the Lower Kuskokwim area (**Figure 1**; Perry 2014, Rearden 2015). The Lowest Yukon, Andreafsky, and Paimiut Units are located within the Unit 18 remainder hunt area. These survey areas were purposely kept small to allow for multiple areas to be surveyed annually.

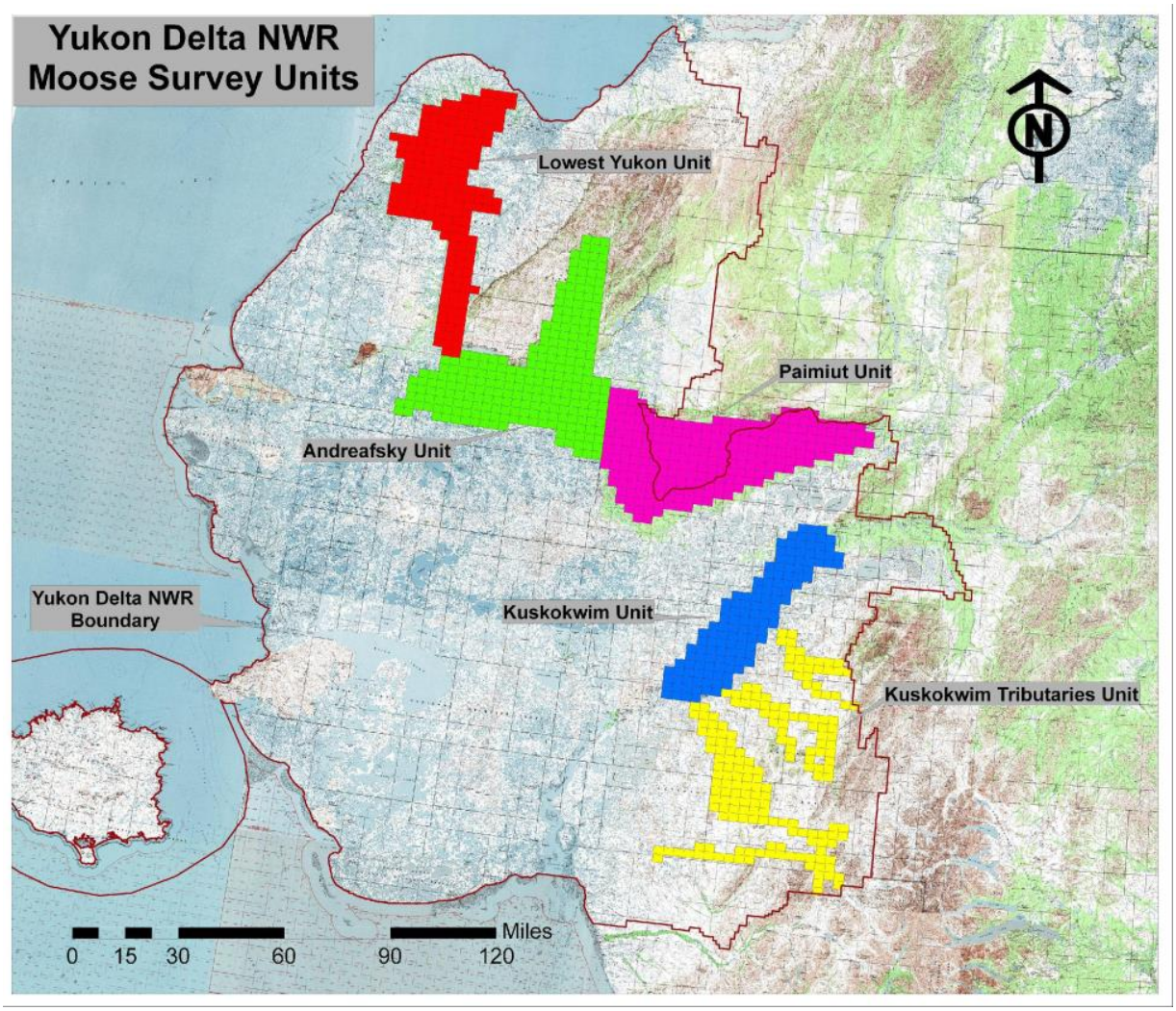

Figure 1. Yukon Delta National Wildlife Refuge Moose Survey Units (Rearden 2015).

Between 1988 and 2008, surveys to estimate population size were conducted in the Lowest Yukon survey area of Unit 18 (**Table 1;** Rearden 2015, 2017, pers. comm.). At that time, the survey area encompassed the riparian corridor along the main stem of the Yukon River downstream of Mountain Village (Perry 2014). In February 2017, a survey was conducted in an expanded survey area to accommodate the widening distribution of moose. The results of that survey estimated the current population to be 8,226 moose in the expanded survey area, or 4.7 moose/mi^2 (Rearden 2017, pers. comm.). For comparison, the moose population and density within the original survey area was estimated to be 5,719 with 4.8 moose/mi^2 in 2017, compared to 2.4 moose/mi^2 in 2008 (**Figure 2;** Rearden 2015, 2017, pers. comm.).

Table 1. Moose population estimates from spring census surveys in the survey areas located within Unit 18 remainder (Rearden 2015).

Census Area	Year	Estimate at 95%CI	Density (mi^2)	Census Technique
Lowest Yukon	1988	0	NA	Minimum count
	1992	28	0.02	Minimum count
	1994	65	0.04	Minimum count
	2002	674 ± 21.9%	0.59	Spatial method
	2005	1342 ± 21.0%	1.12	Spatial method
	2008	2827 ± 11.98%	2.37	Spatial method
	2008	3319 ± 16.08%	2.78	Spatial method w/ SCF
	2017	5,719± 12%	4.79	Geospatial
	2017*	8,226 ± 11%	4.71	Geospatial
Andreafsky	1995	52 ± 74.0%	0.04	Gassaway method
	1999	524 ± 29.8%	0.23	Spatial method
	2002	418 ± 22.4%	0.26	Spatial method
	2012	2748 ± 19.8%	1.72	Spatial method
	2012	3170 ± 24.3%	1.99	Spatial method w/ SCF
Paimiut	1992	994 ± 19.7%	0.64	Gassaway method
	1998	2024 ± 12.93%	1.3	Gassaway method
	2002	2382 ± 16.1%	1.52	Spatial method
	2006	3614 ± 18.1%	2.3	Spatial method
	2013	5,598 ± 17.8%	3.56	Spatial method
	2013	6,031 ± 20.0%	3.84	Spatial method w/ SCF

*A larger census area was surveyed in 2017 in the Lowest Yukon area.

In the adjacent Andreafsky survey area, which includes the Yukon River from Pilot Station downstream to Mountain Village (Perry 2014), surveys were most recently conducted in 2012 (**Table 1;** Rearden 2017, pers. comm.). At that time, the moose population was estimated at 3,170 moose (2 moose/mi^2), when corrected for sightability (Reardon 2015, 2017, pers. comm.). Like the moose population in the Lowest Yukon survey area, the population in the Andreafsky area has grown

substantially since the early 2000s (**Figure 3**), but it remains at lower density compared to the Lowest Yukon population.

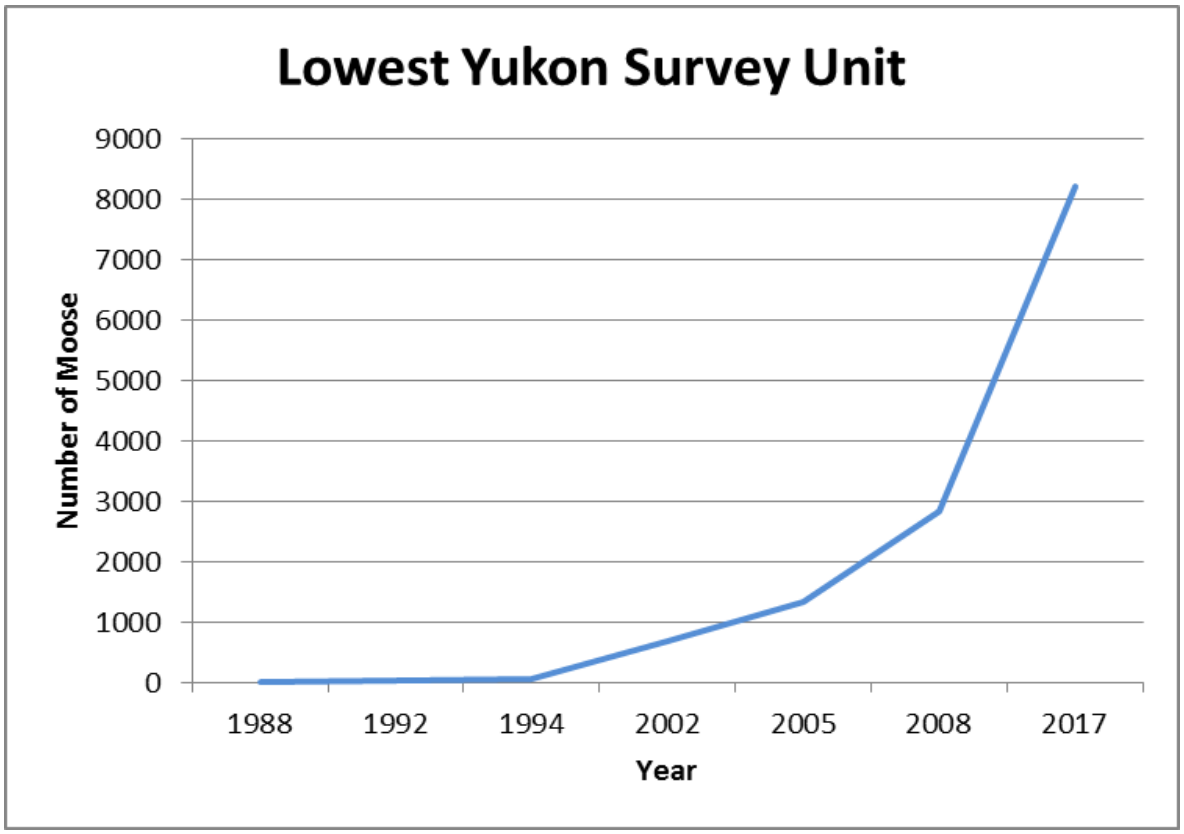

Figure 2. Lowest Yukon census survey area moose population trend since 1988 (Rearden 2015).

Population estimates were conducted in the Paimiut survey area in February of 2013. At that time the population was estimated at 6,031 moose with a density of 3.84 moose/mi^2, which is an increase from the population estimate of 3,614 and density of 2.3 moose/mi^2 calculated in 2006 (**Table 1, Figure 4**; Rearden 2017, pers. comm., Perry 2014).

Adequate survey conditions for fall composition surveys are only present every three or four years. Consequently, composition surveys are completed as conditions allow (Perry 2014). The Lowest Yukon survey area composition data was collected in November 2013. The calf:cow and bull:cow ratios were calculated at 48:100 and 40:100, respectively, which are above the management objectives for the unit (**Table 2**; Perry 2014). Bull:cow ratios in the Andreafsky and Paimiut areas were similar to those in the Lowest Yukon area, at 40 bulls:100 cows in 2011. Calf:cow ratios have increased since the early 2000s and were at 67 calves:100 cows in 2011 (Perry 2014, Rearden 2015, 2017, pers. comm.).

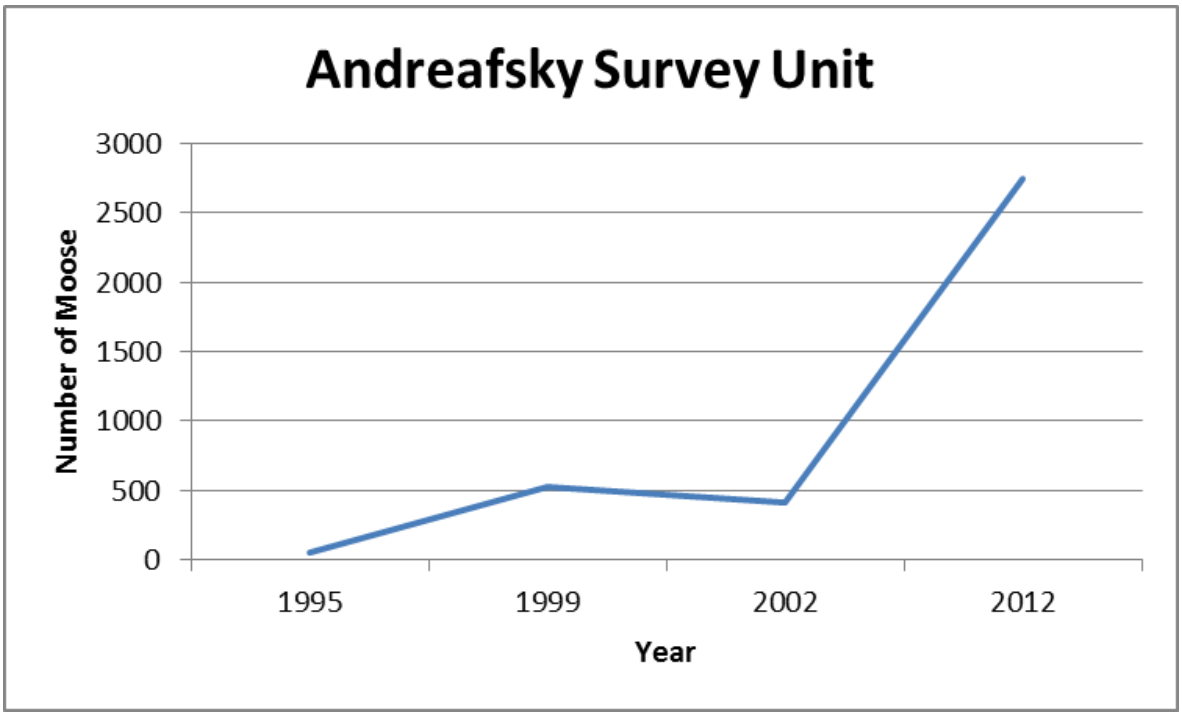

Figure 3. Andreafsky census survey area moose population trend since 1995 (Rearden 2015).

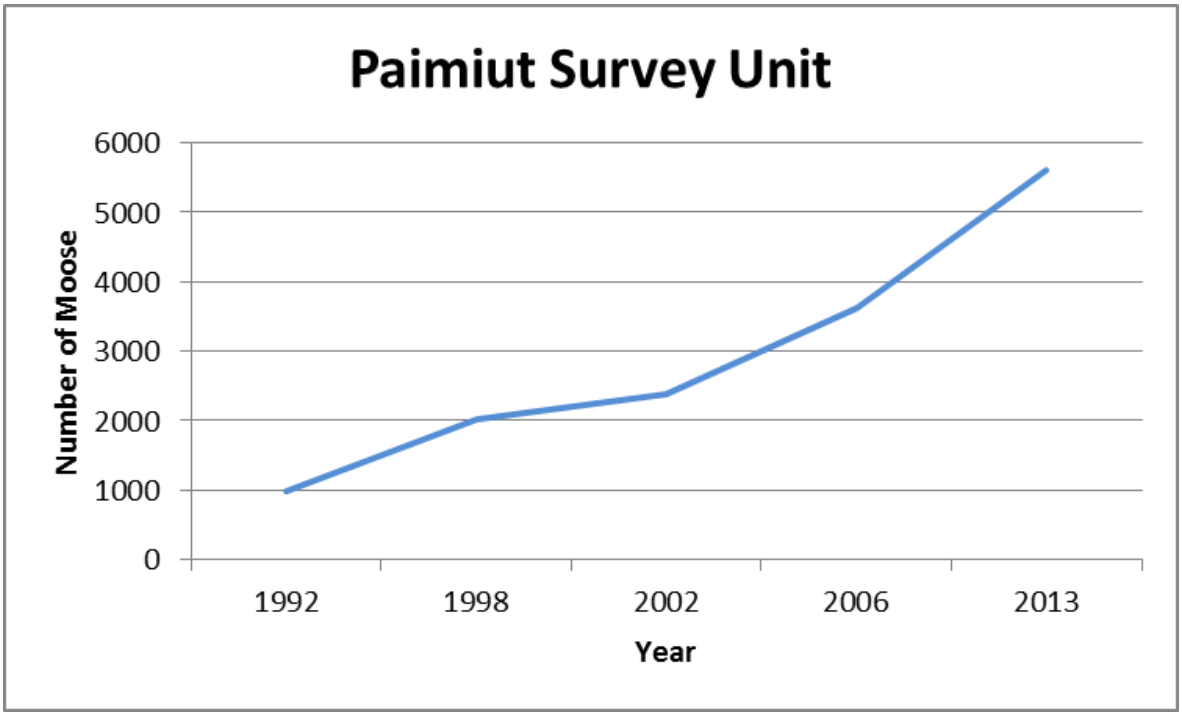

Figure 4. Paimiut census survey area moose population trend since 1992 (Rearden 2015).

Table 2. Composition survey data from the moose survey areas that lie within Unit 18 remainder (Perry 2014, Rearden 2015).

Area	Year	Bull: 100 Cows	Calf: 100 Cows
Lowest Yukon	2010	30	69
	2013	40	48
Middle Yukon (Includes Andreafsky and Paimiut areas)	2002	-	22
	2005	-	42
	2010	42	64
	2011	40	67

Current Events

In 2021 the ADF&G along with Yukon Delta National Wildlife Refuge staff surveyed the lower Yukon, Andreafsky, and Paimiut areas. Unofficially they said preliminary numbers show increases in moose populations in all 3 areas since the last time they were surveyed. Staff estimated there are 20,000-25,000 moose in that area and last year there were between 700-800 moose harvested (Webber 2021, pers. comm.). Official population estimates should be available in the spring of 2021.

Lower Yukon River moose population updates were provided by ADF&G area wildlife biologist, Patrick Jones, to the Yukon-Kuskokwim Delta Subsistence Regional Advisory Council at their March 3-4, 2021 meeting. Mr. Jones reported that the recent aerial surveys indicated this Lower Yukon River moose population was still growing despite the very liberal moose hunt regulations currently in place for this area. He further noted that he would be supportive of any proposals to expand harvest of this abundant moose population to help avoid it reaching the limits of the winter habitat carrying capacity. Mr. Jones further discussed the observed need for more subsistence harvest of moose in other areas of the Yukon-Kuskokwim Delta. The number of harvest tickets issued for moose greatly increased in the Unit 18 Kuskokwim hunt area with over 500 additional permits issued this year. The Kuskokwim hunt area reached a maximum harvest rate of near 10% (Jones, P., Yukon-Kuskokwim Delta Subsistence Regional Advisory Council March 3, 2021 transcript pg. 137-138).

There is currently a demonstrated need for more moose to support subsistence communities throughout the Yukon-Kuskokwim Delta region this winter and ample moose population in the Unit 18 remainder Lower Yukon River hunt area to help address this continuation of subsistence use request.

Effects of the Proposal

If this emergency special action request is approved by the Board, the moose harvest limit in the Unit 18 remainder hunt area will increase from two to three moose through the current hunt season ending on April 30 for Federally qualified subsistence users. No effects are expected on non-Federally qualified users or on this moose population, which far exceeds management population objectives and habitat capacity. The requested increased harvest limit may dampen the continued growth of this

moose population, which would be a positive effect. In addition, the expanded harvest limit might promote further sharing of moose throughout the Yukon-Kuskokwim region and support subsistence families in need.

If this emergency special action request is not approved by the Board, Federally qualified subsistence users will not be able to legally take additional moose from a moose population that is exceeding population goals and habitat capacity.

OSM CONCLUSION

Support Emergency Special Action WSA21-02.

Justification

The moose population in the Unit 18 remainder hunt area far exceeds management objectives and habitat capacity. Increasing the harvest limit from 2 to 3 moose may not be enough to slow the growth of this moose population, but it will provide additional opportunity for Federally qualified subsistence users impacted by decreasing salmon harvest opportunities over the past decade and the current closure to the Unit 18 subsistence caribou hunt. Support of this emergency special action is justified to allow for increased moose harvest opportunity by Federally qualified subsistence users.

Literature Cited

Jones. P. 2021.Wildlife biologist, ADF&G. Bethel, AK. Communication: Yukon-Kuskokwim Delta Subsistence Regional Advisory Council meeting March 3, 2021 transcript pg. 137-138: https://www.doi.gov/subsistence/library/transcripts/5-yukon_kuskokwim-delta

Perry, P. 2014. Unit 18 moose management report. Chapter 20, pages 20-1 – 20-17 *in* P. Harper and L.A. McCarthy, editors. Moose management report of survey and inventory activities 1 July 201 – 30 June 2013. ADF&G. Juneau, AK.

Rearden, S. 2015. Unpublished survey report. USFWS. Bethel, AK. 5 pp.

Rearden, S. 2017. Wildlife biologist. Personal communication: email. Yukon Delta NWR, USFWS. Bethel, AK.

Tape, K.D., Gustine, D.D., Ruess, R.W., Adams, L.G. and Clark, J.A., 2016. Range Expansion of Moose in Arctic Alaska Linked to Warming and Increased Shrub Habitat. PLoS ONE 11(4): 1-12.

Webber, A. 2021. Wildlife biologist. Personal communication: email. Yukon Delta NWR, USFWS. Bethel, AK.